| Chapter V | POSITION PAPER – INFORMATION TECHNOLOGY |
|---|---|

- The huge potential of Information Technology (IT) - today finds applications in all aspects of development and governance
- The potential of IT as an Industry is best exemplified in the estimated revenue potential from IT and its related services. In India, it is expected to be around US$ 17-18 billion by 2008, with the industry providing employment to more than 1 million people
- E-governance and E-commerce have emerged as two crucial drivers of IT for the next decade. E-governance gives citizens the choice of when and where they access government information and services, thereby creating a government-community-citizen infrastructure. E-commerce deals with the buying and selling of goods and services over the internet and has benefits for both business and consumers alike
- The Government of India has recognised IT as the thrust sector for the growth and development of the country and has therefore, formulated policies and incentives for its advancement. Many Indian States like Andhra Pradesh, Rajasthan, etc., have successfully adopted IT in government transactions, education, business, agriculture, social development, etc.
- The Government of Chhattisgarh has recently taken steps to promote the use of IT in the State. However, there is a long way to go in order to harness the true potential of Information Technology. In order to do so, the government needs to begin by formulating an IT policy which will attract growth and investment in the Industry

# Section 1: Introduction

## Introduction

Information Technology (IT) has emerged as the most effective driver in the last century, transforming all spheres of life. During this period, Indian software engineers and professionals have made significant contribution to the technological advancements in this field. Indians have been at the forefront of the IT revolution and a large number of Indians today occupy senior positions in IT companies in developed countries like USA, Japan and Germany.

Over the last decade, the IT industry in India has consistently shown one of the highest growth rates compared to most other industries. In fact, software exports from India have risen from US$ 50 million to US$ 5 billion during the last five years. Recognising such a vast potential of this industry, the Government has set an ambitious target to raise India's contributions to the global IT-industry to US$ 50 billion per annum by 2008. IT spending as a percentage of the Gross domestic Product (GDP), which is currently at about 1.68% is forecasted to increase to 3% of GDP by 2008. The Government of India (GoI) realising that sustenance of such a high growth rate in the long run requires an equally strong and vibrant domestic IT market, has initiated policy measures to promote the use of IT within the country. IT is also expected to serve as a major vehicle for attaining all round socio-economic development in the country.


## Objectives of this Position Paper

The objective of this position paper is to present:

- The current scenario of the IT industry in India and the policies and initiatives taken by the GoI and other Indian States in promoting and developing this sector
- Profiling the range of IT enabled services provided in India and explaining the concept of E-commerce and E-governance, along with their potential benefits for the Indian economy
- Highlighting the importance of IT in overall socio-economic development of the country and presenting a road map for the Government of Chhattisgarh (GoC) to promote and develop Information Technology in the State

## Section 2: Information Technology Scenario in India

This sections provides:

- An overview of the Indian IT industry including the size of the domestic market
- Break-up of the various components of the IT industry
- Major areas of IT application
- Overview of the various initiatives taken by Government of India for the development of IT, and
- The basic drivers for development of the IT industry

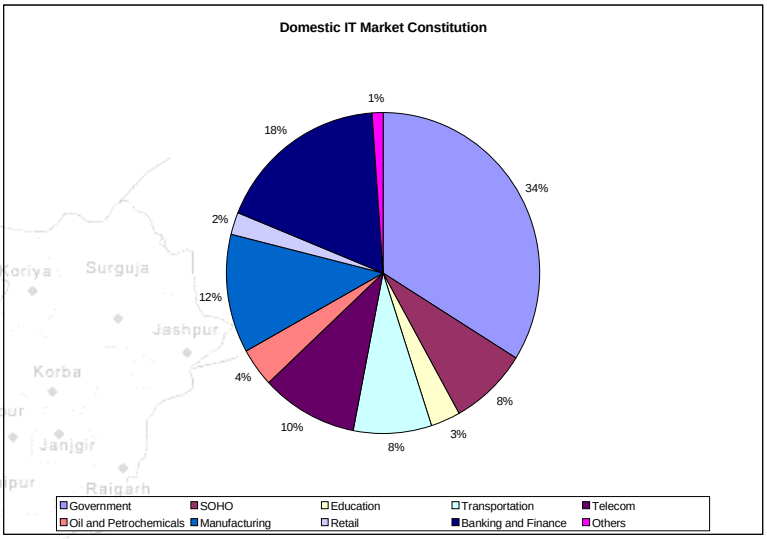
### Overview

Information Technology or IT can be defined as the technology that is involved in processing and transmitting information which includes computing, multimedia, telecommunications, microelectronics and their interdependencies. IT now more often refers to the convergence of various information-based, broadcast and mass media communication technologies.

The different segments of the economy that are actively reaping the benefits of adopting and implementing IT are the Central/State administrations, insurance companies, banks, financial institutions, defence, public tax system, ports, customs, telecom, education and the Small Office Home Office (SOHO) segment.

Government, banks and financial institutions are the major contributors to the growth of the IT industry in India. Manufacturing and transportation sectors have also utilised IT and its related services. The small and medium enterprises (SME) and the SOHO segment are expected to serve as the main drivers for growth in the IT industry in the coming few years. The sector wise contribution of various industries in the growth of the domestic IT market (total market size: Rs. 19,230 crores in 1999-2000) is depicted in Figure V.1.

**Figure V.1**




***Source: National Association of Software and Services Companies (NASSCOM)***

With the rapid advancement towards convergence (interlinking of information, communication and entertainment technologies) of various information delivery systems such as radio, television, telephone, newspapers, fax, computers and computer networks, it has now become feasible to offer IT services using conventional forms of information delivery systems. The last five years have seen phenomenal growth in the country with regard to spread of cable-TV network and mobile phones. Their integration with the Internet has been a major facilitator of empowering people with information. Internet over mobile phones and cable TV networks has ensured that the power of information is delivered to people through the Internet even in the

remotest places in the country, and that too without the use of computers.

## IT Industry in India

The performance of the IT industry in India is best illustrated by its achievements and progress in the last few years, as highlighted below:

- In 2000-01, the Indian IT industry earned revenues of Rs. 55,400 crores, a growth of almost 50% over the Rs. 37,070 crores in 1999-00 (Table V.1)
- During 1995-2000, the Indian IT Industry recorded a CAGR (Compounded Annual Growth Rate) of more than 42.4%, which is almost double the growth rate of IT industries in many developed countries
- The IT manufacturing sector has grown at an average rate of 30-35% annually over the past decade. The industry has over 150 major hardware players supported by over 800 ancillary units and small time vendors engaged in sub-assemblies and equipment manufacturing
- Software continues to contribute a major portion of the Indian IT industry's revenues. During 1999-2000, the software industry's revenues constituted over 65% of the Indian IT industry's annual revenues. The software industry in India grew by 53 % in 1999-2000, with revenues jumping from Rs. 15,890 crores in 1998-99 to Rs. 24,350 crores in 1999-2000
- The IT training segment grew at almost 37% over the previous year, with revenues of Rs. 1,720 crores in 1999 -2000. The web design, e-commerce and high-end certifications contributed to a significant portion of the IT training industry's revenues

**Table V.1**

| Year | Rs. Crore | US$ billion |
|---|---|---|
| 1994-95 | 6345 | 2.04 |
| 1995-96 | 9892 | 2.88 |
| 1996-97 | 13700 | 3.80 |
| 1997-98 | 18662 | 5.03 |
| 1998-99 | 24781 | 6.05 |
| 1999-00 | 37080 | 8.67 |
| 2000-01 | 55400 | 12.20 |

***Source:NASSCOM***

- During 1999-2000, more than one million personal computers (PC) were sold in India. This took the PC penetration in India to 4.3 per 1000 people by the end of 1999-2000 (as on 31st March 2000). Since then the penetration rate went up to 5 per 1,000 people (as of 31st December 2000). By 31st December 2000, the Internet subscribers stood at 18 lakhs (55 lakh users)

The performance of the various segments of the Indian IT industry is presented in Table V.2.

**Table V.2**

| Rs. Million | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 |
|---|---|---|---|---|---|---|
| **Software** | | | | | | |
| Domestic | 10700 | 16700 | 24100 | 35100 | 49500 | 72000 |
| Exports | 15350 | 25200 | 39000 | 65300 | 109400 | 171500 |
| **Total** | **26050** | **41900** | **63100** | **100400** | **158900** | **243500** |
| **Hardware** | | | | | | |
| Domestic | 18300 | 35600 | 37800 | 44970 | 42350 | 62000 |
| Exports | 5500 | 1200 | 10300 | 7430 | 155 | 3700 |
| **Total** | **23800** | **36800** | **48100** | **52400** | **42505** | **65700** |
| **Peripherals** | | | | | | |
| Domestic | 4590 | 6720 | 6530 | 8330 | 13600 | 18700 |
| Exports | 180 | 210 | 520 | 680 | 730 | 1150 |
| **Total** | **4770** | **6930** | **7050** | **9010** | **14330** | **19850** |
| **Training** | **3310** | **4970** | **6600** | **9420** | **12500** | **17200** |
| **Maintenance** | **4400** | **5920** | **6560** | **8240** | **9780** | **11300** |
| **Networking & Others** | **1120** | **2,40 0** | **5590** | **7150** | **9800** | **13250** |
| **Grand Total** | **63450** | **98920** | **137000** | **186620** | **247815** | **370800** |

*Source: NASSCOM*

## IT Enabled Services

IT Enabled Services (ITES) covers the entire range of services which utilise IT applications to empower organisations and improve efficiency. Increased efficiency / reduction in cost can be achieved by organisations developing their own ITES or by outsourcing. Outsourced IT enabled services are now receiving greater attention as this category of ITES has a tremendous potential for growth and can significantly contribute towards creating employment opportunities in India.

The major segments of ITES that have large market potential are presented below:

- Customer Interaction Services such as call centres
- Finance and Accounting Services such as back office data processing for airlines etc.
- Engineering and Design Services such as outsourced design activities
- Human Resource Services such as outsourced payroll and allied activities
- Animation for movies and TV serials, cartoon strips, etc.
- Medical Transcription Services and medical consultancy
- Data Search, Integration and Analysis covering areas such as preparation of legal databases, research & preparation of reports based on databases on past records
- Marketing Services such as bureaus for marketing products or services based on call centres or local market data bases, etc.
- Web Site Services for creating site content, advertising, etc.
- Education for utilising IT infrastructure to strengthen formal

education system in remote areas (distance learning programmes, etc.)

As per a survey done by the National Association of Software and Service Companies (NASSCOM), IT Enabled Services employed 41,000 people in India as on 31st December 1999, and generated revenues of Rs. 20.30 billion (US$ 460 million). This is expected to increase to US$ 17-18 billion by 2008 with an employment of more than 1 million people. The details are presented in Table V.3.

**Table V.3**

| IT Enabled Services | 1999 | | 2008 (Projection) | |
|---|---|---|---|---|
| | Employed | Rs. Billion | Can be Employed | Rs. Billion |
| Back Office Operation/ Revenue Accounting/ Data Entry/ Data Conversion | 14000 | 6.8 | 260000 | 1900 |
| Remote Maintenance and Support | 4100 | 2.7 | 180000 | 1350 |
| Medical Transcription/ Insurance Claim Processing | 6100 | 3.0 | 160000 | 110 |
| Call Centres | 2800 | 1.0 | 100000 | 60 |
| Data Base Services | 1400 | 0.7 | 100000 | 65 |
| Content Development | 12600 | 6.1 | 300000 | 250 |
| **Total** | **41000** | **20** | **1100000** | **3735** |

***Source: NASSCOM***

## E-commerce

E-commerce or electronic commerce is the buying and selling of goods and services on the Internet. According to WTO, e-commerce refers to the production, distribution, marketing, sales or delivery of goods and services by electronic means. E-commerce is fundamentally about new business models and value propositions. It can be termed as Social System Infrastructure (as per the Japanese) which integrates business, consumers & society, service sector and the government.

India is one of the twelve countries, which have given a legal sanctity to e-commerce. According to a survey by NASSCOM, the total volume of e-commerce transactions in India was about Rs. 450 crores in the year 1999-2000. Out of this, about Rs. 50 crores was contributed by retail Internet or Business-to-Consumer transactions, and about Rs. 400 crores was contributed by Business-to-Business transactions. The Indian e-commerce business is expected to grow at a rate of almost 300 -600% and transactions could reach Rs. 40,000 crores by 2003-04.

The development of e-commerce provides an opportunity to small and medium enterprises operating in the State of Chhattisgarh to project their capabilities globally and to participate more proactively in such ventures. There are a large number of Small and Medium Enterprises (SMEs) in Chhattisgarh, which are involved in minerals and metal processing and act as ancillaries to big industries like Bhilai Steel Plant, Bharat Aluminium Company Limited, etc. The Internet presents an excellent medium for such industries to tap markets outside the State through participation in B2B (Business to Business) sites like Metaljunction and India Markets.

Many traditional sectors such as handicrafts, textiles, natural medicines, etc. which have lacked market access due to resource constraints – should also benefit from the Internet.

## E-governance

Good governance is a pre-requisite for the orderly functioning of society and IT is now widely recognised as the tool by which good governance can be delivered. The various aspects of governance that can be significantly improved with the use of IT include:

- Government-Citizen (G-C) interface
- Government-Business (G-B) interface
- Intra-Governmental processes

The various benefits that accrue from e-governance initiatives include:

- Any-where, any-time services to citizens
- One-stop shop for all transactions in the G-C interface
- Better accountability, responsiveness and transparency of systems
- Highly efficient government machinery & systems
- Reduced discretion and arbitrariness

Realising the importance and potential benefits of e-governance, various States have taken steps to implement such initiatives. Boxes V.1 and V.2 present details of such initiatives taken by Madhya Pradesh and Andhra Pradesh.

***Andhra Pradesh plans to add "e-government outlet" facilities to the public long-distance call booths in 400,000 villages out of a total of 600,000***

A government-community-citizen infrastructure has its own significance. Citizens enjoy fast and convenient service and the government becomes more integrated into the community and is able to focus its resources where they are needed most.

The Government of India has taken this fact into consideration and created SMART governance (Simple, Moral, Accountable, Responsive and Transparent). With this in mind, the Government has also approved its policy to allocate 2 to 3% of its budget towards the development of IT. Various States have framed their IT policies and have started implementing the same. Andhra Pradesh (AP) Government, realising the investment potential and developmental impact of IT has taken steps to make Hyderabad a Cybercity. It has also taken numerous steps to build a better communication infrastructure and to ensure availability of trained IT manpower.

State Government departments, which have maximum interaction with the public, can leverage on IT to considerably improve their levels of service delivery. These departments include:

***Gujarat Road Transport Department's computerised check-post project has eliminated corruption at 10 Octroi posts on the State's borders, and increased revenue from Rs 60 crores in 1998-1999 to Rs 250 crores in 1999-2000***

- *Public Grievances and Utilities:* Data relating to electricity, water, telephone, ration card, sanitation, public transport, etc.
- *Rural Services:* Data relating to land records, people below poverty line/ economical weaker sections (EWS) families (Box V.3 profiles select e-governance initiatives in rural India)
- *Social Services:* Data relating to pension seekers, widows and old age rehabilitation, compensation, birth and death certificates, vehicle registration, school and university

registration, driving license issue, etc.

- *Public Information:* Data relating to employment exchange registrations, examination results, government notifications, forms and schemes
- *Commercial:* Data relating to taxation and filing of returns, custom duty, Central/ State excise duty, property tax, Octroi, etc.

**Box V.1: E-governance in Madhya Pradesh**

The Madhya Pradesh government has developed a strategy to introduce the concept of e-governance and plans to computerise and network all government departments. It also plans to set-up computer kiosks across the State to reduce transaction time and cost for citizens interacting with State agencies. The kiosks will enable people in remote areas to transact most of their work like obtaining government documents and records, getting licenses, permits or certificates or paying taxes, etc. without visiting the government offices. Priority will be given to computerising the revenue earning departments like commercial tax, land records and transport. Subsequently, all other departments will be computerised and linked to the government network. The computerisation of the commercial tax and land records department will allow the citizens to pay taxes and land revenue online through the kiosks. This way the government will also be able to keep a track of the tax dues and revenue earnings.

Similarly, with the computerisation of the transport department, people will be able to register their vehicles, obtain licenses and road permits etc. through the kiosks. The facility of digital signatures will be used for issuing certificates, permits and licenses. The transport department is also going to introduce a digitised 'smart card' to vehicle owners, which will contain all the information regarding the registration of the vehicle, the vehicle owner and license etc. Under the project, toll barriers will also be computerised and connected to the government network.

For the project, Reliance Industries Ltd. has entered into a Joint Venture (JV) with Madhya Pradesh State Industries Development Corporation (MPSIDC). Under a Memorandum of Understanding (MoU), Reliance will set-up 500 information kiosks by March 31 2001, and 7,300 more in the following year. 80% of these kiosks would be set-up in rural areas for which Reliance will lay an optical fibre cable network of 4500 km in the State. The kiosks will enable citizens to access information from various State government departments. There will be no cash contribution to the joint venture's equity by the MPSIDC. However it would procure land and ensure other sanctions for running the electronic information centres (EICs) and get a 5% equity in the joint venture. A joint board of directors will manage the venture.

The idea behind introducing this system is not only to ensure convenience to the people but also to make it easier for the government to function while removing red- tapism and ensuring transparency.

**Box V.2: E-governance in Andhra Pradesh**

The Andhra Pradesh government's e-governance initiative is best known for APSWAN (Andhra Pradesh State Wide Area Network), a State-wide network for voice, data and video communication, which is the basic information highway for improving government-citizen and government-industry interface. In subsequent phases, APSWAN would be extended to all 'mandal' headquarters, other towns and eventually to all villages.
Prior to this, one of the first e-governance projects effectively undertaken was by the State's Department of Registration. It provided an easy and transparent process for registering and documenting immovable property.
TWINS, also known as the 'IT project focussed on the common man', has enabled the citizens of Hyderabad and Secunderabad to access select services and information on various departments of the State and Central Governments. This is possible by accessing Integrated Citizen Service Centres (ICSCs). The ICSC is a one-stop shop for key citizen services - such as payment of electricity, water and sewage bills, property tax, registration and issuing birth and death certificates, etc. The government has also initiated the Secretariat Knowledge Information Management System with a view to exploit the power of computer networks, automate workflow in the Secretariat and provide effective tools for performance evaluation. In addition, the Andhra Pradesh Planning Department has also put together a sophisticated Geographical Information System (GIS) which captures inputs from remote sensing satellites to create thematic data on road networks and community infrastructure.

For implementing the e-governance project, 44 services were identified from 12 government departments, out of which 18 services of 6 departments have been made fully operational as part of the pilot project. Few of the services being provided are:

- *Utility Bill/Tax payments*
  - Electricity, Water & Sewerage Bills
  - Property taxes
- *Certificates*
  - Registration and Issue of Birth Certificates
  - Registration Issue of Death Certificates
  - Caste Certificates
- *Permits/ Licenses*
  - Issue of Trade, Learner's licenses etc
  - Issue/ renewal of Driving Licenses (non-transport vehicles)
  - Registration Certificates of new vehicles
- *Information*
  - Details of building permits issued
  - Market value Assistance (Registration Department)
- *Facilitation*
  - Change of address (transport)
  - Transfer of Ownership of non-transport vehicle

**Box V.3: E-governance Projects in Rural India**

**Madhya Pradesh**
Madhya Pradesh has taken the Internet revolution to the rural level with the opening of rural cyber cafes in Dhar district. *Gyandoot project* of the tribal district of Dhar is an Intranet network of 26 soochanalayas (Information Centres) set up at the cost of Rs. 25 lakhs, that benefit nearly half a million people across 600 villages. The villagers are able to access any information like mandi prices of crops, copies of land records, grievance redressal, sending e-mails in their language, applying for assistance under government schemes, getting their health records accessed through the main hospital at Indore, etc.

**Box V.3: E-governance Projects in Rural India (contd.)**

The government has only played the role of the facilitator in this project. The centres are managed by soochaks, who are local folks and not government employees. Each soochak is expected to earn at least Rs. 30,000 per annum and the maintenance of the network has been handed over to a private entrepreneur. This scheme would be implemented all over the State in the next two years. Apart from bringing about economic prosperity, it could also engineer social change and this would enable the common man to have access to all public offices making the bureaucracy more transparent and democratic.
All the 26 centres have been set up at central locations in roadside villages in the district. A remote access server has been provided at the computer control room of the zila panchayat for operating the network.

**NDDB**
The National Dairy Development Board (NDDB) has successfully deployed IT-based machines at milk collection centres. This technology is used in co-operatives to measure the butterfat content of milk, test the quality of milk, and make payments to the farmers. It has reduced payment time from 10 days to less than a few minutes and instilled confidence of farmers in the co-operative set up. These factors have helped the milk market to expand and assisted NDDB in dealing with problems of adverse selection and corruption.

**Maharashtra**
The 'Warana Wired Village Project' covering 70 villages around the river Warana in Maharashtra has been executed by the National Informatics Centre for the Government of Maharashtra and the Warana Vibagh Shikshan Mandal. The existing co-operative structure has been used in concert with State of the art infrastructure (high speed VSATs) to allow Internet access to existing co-operative societies. The project aims to provide agricultural, medical, and educational information to villagers by establishing networked "facilitation booths" in 70 villages. The unique aspect of this project is the involvement of 25 local co-operatives.

In another project, the Maharashtra Government has taken initiatives to improve administration through the formulation of a Disaster Management plan for the State. In implementing this plan, the government has set up a dedicated State-wide VSAT network, over which a full-fledged communication facility is available. A GIS-based Disaster Management Information System for all districts except Mumbai is being created. This database will enable district officials to plan better for disaster preparedness, vulnerability analysis and response plans. This project, which has been financed through the World Bank, is an excellent example of the deployment of technology to improve administrative efficiency.

## Government of India Initiatives

The GoI has identified IT as a major thrust sector and plans to make India an IT superpower. As an initiating step, a high powered National Task Force on IT and Software Development was set up by the Prime Minister's Office on May 22 1998, under the Chairmanship of the Deputy Chairman of Planning Commission. This task force was given the mandate to formulate the draft of a National Informatics Policy.

The 108 recommendations of the IT Action Plan Part-I emphasise the need for a policy framework in order to create an ambience for the accelerated flow of investment into the IT sector, with specific orientation towards the software industry. The Information Technology Action Plan Part-II furnishes 84 policy

instruments for the development, manufacture and export of IT hardware. The IT Action Plan-III, which forms the long term national IT policy, presents strategic policies for the IT industry including research, design & development, human resource development, citizen-IT interface, content creation, micro electronics, creation of fibre-optic infrastructure, financing, and so on. As part of its IT development plan, GoI government has also launched 'Project Sankhya Vahini' which seeks to create a high bandwidth backbone for educational and research institutions in India. Details of the same are given in Box V.4 below.

**Box V.4: Project Sankhya Vahini**

**Introduction**

Project Sankhya Vahini involves establishing a very high bandwidth data network across India and enriching it with educational, healthcare and other knowledge oriented multimedia applications for supporting the technological and economic growth of the nation. This network will primarily be a data network forming the National Backbone, and will initially connect atleast 10 metropolitan centers and over 100 universities, institutions of higher learning and research centers. Since the speed of the network will be more than 1000-10000 times the speed currently available in the country, it will not only be able to meet the research, teaching and learning requirements of educational institutions, but also the high bandwidth data communication needs of other organisations in the commercial, manufacturing and financial sectors. Sankhya Vahini will also provide the testbed for developing and testing multi-giga bit technologies that will soon become the norm in the next decade. The network will be set up in the following phases:

- The first phase involves creating an Internet Backbone by freeing (allocating) a few fibers exclusively for this program from the existing Department of Telecommunications (DoT) network to support a bandwidth in the range of 10 GBPS or more. The proposed bandwidths dedicated exclusively for data would place India on par with the US and other advanced technological nations in the world
- The second phase involves setting up a series of Urban Data Networks (UrbanLinks), linked to the National Backbone. This would be implemented by freeing a few existing fibers for this network and by laying additional fibers with enhanced bandwidth capability. These networks would provide scalable high speed connection points and would support access to a wide range of end-users

**Partnerships & Structure**

IUNet Inc., was set up by Carnegie Mellon University (CMU), a leading educational institution based in Pittsburgh, USA, with a charter to design, develop and manage a high technology Internet backbone by setting up a high-speed data network internationally. This Internet Backbone is primarily intended to provide educational services internationally. The program will also access educational content from other leading US and global scientific institutions, and make them available for Internet users anytime, anywhere in the world.

IUNet Inc. in partnership with leading US technology corporations (leading technology providers) will set up a venture in India called IUNet (India). IUNet (India) will be set up in partnership with Department of Telecommunications and its family of corporations and with leading Indian educational institutions. The design and implementation for creating the National Backbone and the setting up the UrbanLinks will be co-ordinated jointly by IUNet (India), DoT and key technology providers. IUNet (India) will also work with educational institutions in India and the US to create and make available the necessary educational and training content to the network. In addition IUNet (India) will also create the necessary infrastructure to manage the network.

## Section 3: The Way Forward

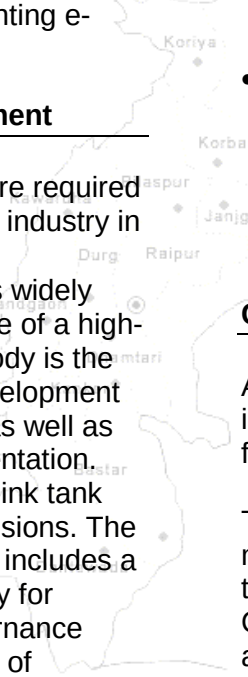
This section presents:

- The pre-requisites (enablers) for the development of IT in the State of Chhattisgarh
- The current situation in Chhattisgarh with respect to the above pre-requisites
- Potential areas of IT application in the State
- Action Plan for promoting and developing IT in the State; and
- Recommendations on a possible State wide Information System Organisation for implementing e-governance

### Pre-requisites for Development

The various enablers which are required to spur development of the IT industry in the State include:

- *Institutional Structure*: It is widely believed that the existence of a high-powered policy making body is the key to the design and development of a successful IT policy as well as for monitoring its implementation. This body would form a think tank that would take quick decisions. The institutional structure also includes a technical board (especially for ensuring a proper e-governance initiative) which is abreast of technological advances so that the State can choose the best option. It is also important to converge technical standards so that the State does not create islands of excellence which cannot communicate with one another
- *E-governance Initiative*: As indicated previously in the position paper, Government is one of the major user segments of IT services. Thus initiatives in e-governance can be one of the major contributors to development and promotion of IT in the State
- *Infrastructure Availability:* One of the most important pre-requisites for fostering the growth of is the availability of required infrastructure. This includes adequate and reliable bandwidth availability, reliable and extensive optical fiber backbone, International Gateway Hub (IGH), wireless connectivity etc.
- *Human Resources:* Availability of sufficient numbers of well trained IT manpower is essential for the development of the industry
- *Policy Framework:* A comprehensive IT policy which encourages private sector investment and addresses issues of right of way, is also an essential pre-requisite for the overall development of this sector




### Current Position

As indicated earlier, telecommunication infrastructure is one of the main drivers for development of the IT industry.

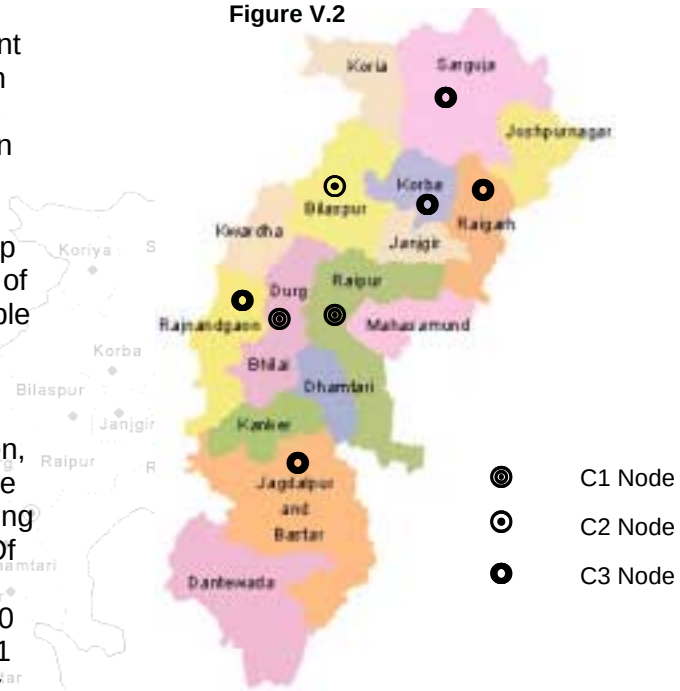
Telephone density is an important measure of the extent of development of telecommunication infrastructure. Chhattisgarh scores poorly under this account. A telephone density of less than 1 is extremely low when compared internationally. Even within India it is one of the lowest amongst the other States - far lower than the current overall density for India (2.6). However, it should be noted that significant enhancements in telephone connectivity are expected in the near future. Bharat Sanchar Nigam Limited (BSNL) plans to provide OFC to all the 500 exchanges in the State by December 2001. Currently about 25% of the exchanges have been privided with Optical Fible Cables (OFC). Moreover, Chhattisgarh is one of

the few States wherein the private basic service provider (Bharti Telenet under the "Airtel" brand) is making significant investments in the OFC network. It has laid 900 km of Optical Fiber and 430 km of Copper cable in Chhattisgarh and is planning to expand its network.

It should be noted that for development of IT in the State, data communication backbone is of critical importance. On this front Chhattisgarh is proceeding in the right direction. An International Gateway Hub (IGH)-cum-Software Technology Park (STP) is being set-up in Bhilai. This would result in creation of IGH of 2 MBPS capacity and is scalable for meeting future requirements.

Figure V.2 depicts the Internet Backbone in the State. As can be seen, out of the 8 nodes in the State, five are C3 nodes which are capable of handling approximately 500-600 subscribers. Of the balance, Bilaspur has a C2 node, capable of handling approximately 900 subscribers. Durg and Raipur have C1 nodes that can cater to approximately 1200 subscribers. However, these systems are scalable. It is understood that the node at Raipur is being upgraded to A2 (capable of serving approximately 4000-5000 subscribers), with the current C1 node getting transferred to Bilaspur.

**Figure V.2**




**Box V.5: E-governance Initiative in Chhattisgarh**

On behalf of the government, Chhattisgarh Infotech Promotion Society (CH*i*PS) has signed an agreement with the Raipur Municipal Corporation (RMC) and CMC Ltd. for a comprehensive E-governance pilot project in the State. The project – Chhattisgarh Online Information System for Citizen Empowerment (CHOICE) is expected to act as a communication backbone offering 'single window services' to citizens. The key elements of the project would be to create a framework for smooth transactions at the District Collectorate, Raipur Development Authority (RDA), Chhattisgarh State Electricity Board, Regional Transport Authority and other related offices apart from the municipal corporation.

Citizens would be able to benefit from the project, as they would be able to easily make queries about electricity bills, tax dues of municipalities, rental payments to RDA, status of building plans at RMC, etc. Citizens can also pay their electricity bills online.

The project cost is estimated to be around Rs. 9 crores. About Rs. 7 crores would be spent in creating State level infrastructure for hardware and software development and the remaining 2 crores for the city project. CH*i*PS would look after the technical, managerial and project planning and design phase, while the technological implications would be handled by CMC. The municipal corporation would be the key service organisation. The pilot project would later be replicated to other cities and rural areas with the help of urban bodies and panchayats.

Bharat Sanchar Nigam Limited (BSNL) plans to provide OFC to all the 500 exchanges in the State. All district headquarters are currently linked through an optical fibre network (primarily of 6 and 12 strands) except Jagdalpur, which is currently linked through a Microwave link. This link is planned to be upgraded to an optical fibre cable in the near future.

The Government is yet to formulate an IT policy. However, the Government has taken steps to use IT for effective governance. One such effort relates to the e-governance (Box V.5) project being set-up in the State.

## Potential IT Applications for Chhattisgarh

The use of IT in the following areas could have significant benefits for the development of the State:

- Electronic governance
- Enabling literacy and education for the masses
- Fulfilling local information needs of the people
- Enabling better economic conditions for the people
- Educating citizens


### Electronic Governance

To have a visible impact of the benefits of IT, the Government must select major services at different levels such as the ministries/ departments, Government, district administrations, municipal services and services related to local governance at panchayat level and realign them through the extensive use of IT. Each Government agency involved in providing public oriented services should identify at least one area and use Information Technology so that all aspects of service delivery to the people transforms into an IT based service. Some of the applications that the Government agencies at different levels could undertake are:

- Computerisation of land records across the State, with computerised land/ property documents to be made available to people at all levels (including villages) in a time bound manner
- Payment of bills/municipal taxes
- Computerisation of information related to court cases particularly the ones relating to land/ property disputes and extensive use of computers in courts at all levels in the State
- All government regulations, notifications and forms for various services at all levels of Government up to municipal / local government agencies to be made available to the people through Internet

### Enabling Literacy and Education for the Masses

Although literacy in the State has shown significant improvement in the last decade, Chhattisgarh continues to have a large population of illiterates in the country. In an information driven society where socio-economic growth depends on the capability to acquire and effectively utilise information, it is important that citizens are not only fully literate but are also educated in a way that they can fully exploit the benefits of technological advancements in various fields.

With the convergence of various technologies related to communication and delivery of information (such as video, audio, telephone, television, newspapers, computers etc.) into one unified framework, IT provides a unique

opportunity to spread literacy and education on a mass scale at an affordable cost. Convergence thus enables ease of providing educational material to the masses, which is one of the pre-requisites to spread literacy and education. The State Government could look at the concept of Community Information Centres, Community Library Centres and Panchayat Centres across the State, which could function as major hubs for educating the masses.

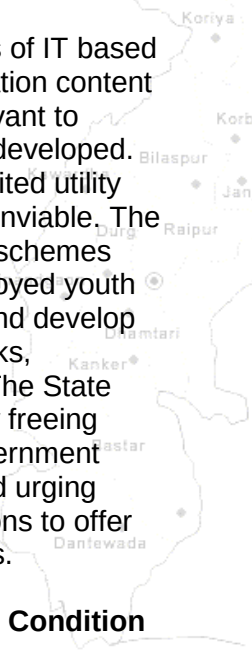
**Fulfilling Local Information Needs of People**

One of the major drawbacks of IT based systems is that their information content is generally not directly relevant to people for whom these are developed. Such systems thus have limited utility and become commercially unviable. The Government should launch schemes that would enable self-employed youth across the State to set up and develop content for Information Kiosks, particularly for rural areas. The State could hasten the process by freeing these schemes from all government regulations and licenses and urging banks and financial institutions to offer attractive financing schemes.

**Enabling Better Economic Condition for the People**

Information Technology must be used to ensure improvement in economic status and purchasing power of people at all levels. Some of the areas that could be addressed by IT are:

- *Employment Generation*
  Large scale utilisation of Information Technology in a manner that will result in massive new opportunities for employment generation
- *Direct Marketing of Rural/ Agro Products*
  One of the important pre-requisites for improving the socio-economic status of people in villages is to ensure that their products reach the right kind of markets and in minimum time without involving middlemen. The reach of IT to rural areas will provide unique opportunities to producers of rural products, agricultural/ agro- processing products, rural handicrafts, etc., to have direct access to markets. The Internet will enable advertising of rural products produced even in the remotest of villages to national and international markets
- *Increasing access for SMEs*
  IT could facilitate the SMEs to develop an outward focus by increasing access to markets outside the State




**Educating Citizens**

Internet based information delivery systems in combination with the conventional broadcast media, TV and radio could act as a major delivery system for educating citizens. This would include information regarding their rights and duties and also help in people's participation in programmes like family planning and welfare, conservation of environment, preservation of moral and cultural values, awareness about growth and employment opportunities and their benefits

**Action Plan**

In order to develop the potential of IT in the State, the Government of Chhattisgarh needs to take various measures. These include:

- Formulation of a State IT Policy, incorporating the various policy measures and incentives that the Government would provide in order

to develop this industry. The policy should also cater to an appropriate legal framework for the creation of an IT-based society with focus on critical issues like Intellectual Property Rights (IPR) security and safety of information. IT policies of Rajasthan and Andhra Pradesh have been presented in Boxes V.6-7 at the end of the chapter as illustrations of various State Government initiatives. The various aspects that would need to be addressed by the policy include:

- Measures for expansion in the use of the Internet by all sections of society, especially in business and education
- Incorporating ways by which the use of IT can be maximised in the Government at all levels so as to make its functioning people-friendly, transparent and accountable
- Establishing a base for manufacturing computers, computer components and peripherals
- Planning for training and manpower development involving government agencies, private sector, educational institutions, etc. to increase the number of skilled IT professionals in the State
- Providing incentives for private sector participation with a view to raise the necessary financial resources in providing the backbone for developing IT infrastructure and IT related services in the State
- Developing a strategy for the extensive use of Information Technology in all areas of the State's economy – agriculture, industry and services, as a critical input in making Chhattisgarh self- sufficient in adoption of IT

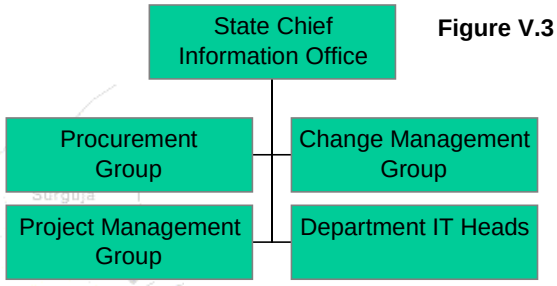



**Figure V.3**

## Information System (IS) Structure

In order to implement a State wide E-governance initiative, there is a need to create an IS organisation structure wherein the Government departments and the IS organisation share a common vision.
The role of the IS organisation will be to provide leadership and guidance in implementing Information Technology solutions across the State. However, the size of the IS organisation should be restricted to the minimum number required to deliver the objectives. The option of deputing requisite functionaries from other departments should be considered.

The government should focus on utilising the benefit of IT applications and should not focus on acquiring technical development skills. Therefore, application development and network and infrastructure management related activities should be outsourced to agencies that have competency in these areas. The IS organisation should focus on providing the appropriate policy

frameworks, enabling adoption of IT across different departments, managing IT implementation projects and providing functional skills required for application development.

Based on PwCs prior experience of working with States in implementing IS organisations, a model organisation structure for the State of Chhattisgarh is set out in Figure V.2. The indicative roles and responsibilities of the various departments is given below:

*State Chief Information Office (CIO):*
This department would be incharge of the overall IT strategy and business development in IT. Its main functions would be:

- To champion the implementation of IT architecture in the State
- To finalise contracts with vendors (hardware, software, communications, etc.)
- To periodically review and update the State IT policy
- To formulate information systems standards for State government departments
- To approve the department plans, monitor the implementation of IT plans
- To prepare budgets for IT spending for the State based on inputs from department IT heads
- To form strategic alliances with prospective business partners

*Change Management Group:*

- To champion the change management initiatives of the State Government
- To assess readiness of the department and users for change
- To determine the training needs of users and organise training/educational workshops
- To ensure accessibility of information to all sections of society
- To carry out promotional campaigns to increase public awareness of the benefits, opportunities and importance of being online

*Procurement Group*

- It would be the central body for purchasing all IT related components
- It would survey the market and identify potential vendors
- It would liase with vendors and negotiate contractual terms
- It would place purchase orders with the vendors based on State requirements

*Department IT Head(s)*

- To develop the IT implementation plan for the department in line with the State IT architecture
- To prepare budgets for the department
- To champion implementation of IT initiatives in the department
- To enforce an information system standards within respective departments

*Project Management Group*
This will be a dynamic group consisting of officers drawn from different departments and functions for implementation of IT projects. Its main functions would be:

- Continuously interact with vendor/ application development companies during design and development phase
- Determine user requirements for various applications

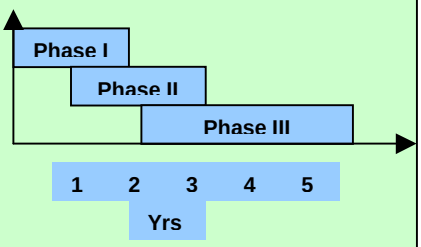
- Assist in the development of applications by providing functional knowledge
- Acquire working knowledge of applications and facilitate training of staff

Box V.8 suggests a likely road map for developing E-governance initiatives in the State.

**Box V.8 – Road map for E-governance**

***Phase I***

**Intranet Set-up**




- Evaluate and select appropriate communication options based on business needs
- Establish a secure Intranet which connects all the districts and divisions
- Connect all departments to this network to establish connectivity between field units and data center where the applications will be hosted

**State Government Portal**

- Design web page format (used as a standard by all State departments)
- Start with an information-centric portal giving information on various services offered by the State departments
- Gradually start on-line transactions of those services which have been successfully piloted internally

***Phase II***

**Departmental Applications**

- Prioritise citizen services like payment of utility bills for pilot implementation
- Enable access to citizens over the Internet
- Re-engineer the services of the departments
- Design and develop applications for the customer services
- Design and implement project planning and management solutions
- Implement at a pilot location in Raipur, Durg and Bilaspur

**Infrastructure Projects**

- Establish the Data Centre
- Departments to connect to this centre through the intranet network
- Train various users within departments

***Phase III***

**Departmental Applications**

- Integrate inter-departmental applications and bring more number of departments online
- Evaluate new e-enabled opportunities using latest tools and technologies

**Infrastructure Projects**

- Evaluate the bandwidth requirements and identify new technologies for increasing bandwidth
- Review and update IT architecture in the State in light of the latest developments in the field of Information Technology

**Box V.6: IT Policy - Rajasthan**

**Mission Statement**

IT will be the driving force behind human development and growth in the new Millennium. The Government of Rajasthan would create an IT friendly environment for integrated participation by all in the development process.

**Policy Initiatives**

- Providing several tax and other incentives to position the State as an attractive location for the development and growth of information technology industry
- Creation of a State-wide Value Added Network (VAN) as a vehicle for the overall growth of IT in the State
- Developing core competencies in IT based human resource development through special focus on rural areas
  - By the year 2002, computer-training facilities will be established in all Panchayat Samiti headquarters in the State. Computer training to be started in all the government secondary schools by the year 2005
  - An IT course module shall be made a compulsory component of all degree courses from session starting in April 2003
- Developing a functional IT driven system of governance with lateral and horizontal computerisation in all State government departments

**Steps to make Rajasthan attractive for IT investments**

To make Rajasthan attractive to IT investors, the government has initiated the following policy initiatives. The main highlights are:

- For promoting Advanced Software Training Institute land up to 5 acres is being offered at a concessional rate of Rs. 200 per sq. meter (50% of prevailing land rate) in the IT Park, Jaipur
- Property transactions in designated IT Parks will be exempted from Stamp Duty
- Commercial buildings which are fully dedicated to Software/IT industry will be exempted from Land & Building Tax on a case to case basis
- A percentage of the sales tax receipts from the IT industry shall be earmarked for strengthening the IT infrastructure in the State
- Promotional campaigns and visits targeting investments into IT industry from countries like Singapore, USA, Japan, etc., will be undertaken
- Complete one-stop service will be provided to all IT units within a time bound schedule
- The State Financial Institutions and the Banks, in line with the approved policy of Government of India, shall treat IT Software and IT Services as priority sectors
- Board of Infrastructure Development & Investment Promotion headed by the Chief Minister will review the IT sector related projects regularly. Decisions on all investment proposals will be taken within 30 days by all concerned departments
- Software industries will be treated as industrial (and not commercial) consumers and electricity tariff applicable to the industrial consumers will be levied on such industries
- A Venture Capital Fund (VCF) shall be created to encourage innovative IT projects/ Software projects
- All software industries including Services and Training Institutions in IT will be entitled to 'Industry' status
- The Government shall create a separate area for setting up corporate and registered headquarters for major IT national and multinational companies in Rajasthan

**Creation and Upgradation of IT Infrastructure in the State**

- The government shall encourage private sector to become ISPs in the districts
- The government would encourage Internet Access through Cable TV network in line with the approved policy of Government of India
- RSEB would lease the spare capacity for data transmission to ISPs, State Government

**Box V.6: IT Policy – Rajasthan (Contd.)**

- or DOT in line with the approved policy of Government of India
- As and when private internet service providers are permitted by Government of India, right of way will be made available by the government departments and institutions
- An Electronics Complex encompassing Electronics Hardware Technology Park (EHTP) is being developed at Kukas, Jaipur with facilities like quality power, reliable facilities for data, voice & video communication, customs clearance facilities for export & import along with social infrastructure

**Box V.7: IT Policy - Andhra Pradesh**

**Vision**

Andhra Pradesh will leverage Information Technology to attain a position of leadership and excellence in the information age and to transform itself into a knowledge society.

**Preamble**

The Government of Andhra Pradesh has clearly recognised the strategic importance of information technology in creating a competitive economy equipped to face the challenges and exploit future opportunities. Information Technology is increasingly permeating every facet of human endeavor and has radically transformed the way societies work, play, gather and access knowledge and govern themselves. Apart from the enormous benefits accruing from usage of information technology, it is also universally well recognised now that India enjoys a unique comparative advantage globally as a natural base for the information technology industry. The primary strength of the country in this sector being the vast, highly cost-effective, highly skilled and mostly English-knowing technical personnel.

**Incentives**

The various incentives offered by the government for promoting IT in the State are:

- IT Software industry is exempted from the purview of the AP Pollution Control Act, except in respect of power generation sets
- IT industry is exempted from the purview of statutory power cuts
- 25% concessional power tariff shall be allowed to the new IT Industrial units for a period of 3 years from the date of release of power or of going into actual commercial production which ever is earlier
- The Government has totally exempted computer software from the payment of Sales Tax payable under the provisions of AP General Sales Tax Act, 1957
- IT Software Industry is exempted from zoning regulations for the purposes of location
- For IT infrastructure companies establishing facilities on private/government lands, concessions will be in the form of rebate on registration and transfer of property charges and exemption from stamp duty on a tapering scale for sale/ lease of built-up space to the IT Industry
- For IT Industry/ IT infrastructure companies establishing facilities on private lands outside the limits of the Municipal Corporations and the nine surrounding municipalities of Hyderabad and Gaddiannaram village, relaxation of FAR to the extent of 50% of the prevailing norm will be available. For example, if the normal FAR is 1.5, the FAR allowed in such cases would be 2.25
- Investment subsidy for new IT (hardware and software**)** industries would be:
  - 20% of the fixed capital investment but not exceeding Rs.20.00 lakhs; however in respect of entrepreneurs belonging to Scheduled Castes and Scheduled Tribe Categories, the investment shall be 25% of Fixed Capital Cost, not exceeding Rs. 50.00 lakhs
- For Mega Projects with investment exceeding Rs. 100 crores, the government may consider special package of incentives, on a case to case basis, based on the gestation period of projects, pioneer nature of projects, locational aspects, State of the art technology, profitability, scope for further related investments, etc.